

# Analyzing the Tuberculosis Case Register

By HERMAN E. WIRTH, M.D., M.P.A., and BEN Z. LOCKE, M.S.

THE FIRST statewide analysis of local tuberculosis case registers in New York State, excluding New York City, was undertaken in 1952. This analysis was based on certain data contained in the registers maintained by 38 city, county, and State health district jurisdictions. The objectives were to determine the number of cases requiring supervision; to study the characteristics of known cases with respect to age, sex, residence, stage of disease, clinical status, sputum status, and type of supervision; and to evaluate the effectiveness of control activities.

The methods used and results obtained were distributed to all full-time health officers concerned and were published in detail (1). Subsequently, regional conferences were held for three major areas, Buffalo, Rochester, and Albany, for the purpose of reviewing the reported findings and of exploring methods for solving the questions raised by the analysis. These regional conferences, consisting mainly of informal roundtable discussions, were attended by regional and local health administrators, tuberculosis hospital directors, supervising public health nurses, program directors, and staff statisticians as well as representatives of local voluntary tuberculosis associations.

In 1955 a second statewide analysis was conducted from February through June to obtain similar data and to determine what changes

had occurred. The second analysis was also desirable to ascertain the indirect effects of the widespread use of antimicrobial drugs, the emergence of treatment plans on a nonhospitalized basis, and the emphasis on resectional surgery. In addition, there was the need to know what administrative steps had been taken locally to provide more and better service, streamline procedures, remove "deadwood" from the registers, and encourage possible savings. Thus, a fourth objective in the 1955 analysis was a review of the epidemiological and administrative changes in the interim period. Certain items of the 1952 analysis were discarded and other more significant ones included. At the time of the second analysis, 40 local agencies were maintaining case registers.

## Administrative Aspects

The value of the case register to administrators depends on the up-to-dateness of entries relating to the persons registered. For the health officer, the register must present the significant facets of the tuberculosis problem in the community if he is to initiate in proper degree those activities needed to resolve the problem. Such activities as case and contact finding, nursing supervision, laboratory and X-ray examination, clinical consultation, treatment, hospitalization, and disposition can only be effectively conducted with the aid of timely data periodically obtained and promptly recorded in adequate detail. This need has been stressed often (2-5).

Of 23,112 cases contained in registers, 4,807 were excluded from the 1955 study because their retention in the visible case registers was not

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*Dr. Wirth, who has been with the New York State Department of Health since 1948, is associate director of the division of tuberculosis control. Mr. Locke, now chief of the Consultation Unit, Current Reports Section of the National Institute of Mental Health, Public Health Service, was with the New York State Department of Health from 1947 to 1956.*

**Table 1. Tuberculosis cases excluded from 1952 and 1955 analyses, New York State exclusive of New York City**

Status	1952	1955
Total.....	4, 959	4, 807
Inactive, 18 months or more.....	3, 003	2, 927
Minimal, arrested 2 years or more..	1, 141	737
Healed primary.....	291	478
Healed nonpulmonary.....	21	137
Suspect.....	102	328
Dead.....	401	200

in accordance with the suggested criteria of the New York State Health Department (6-8). Nearly 5,000 such cases had also been excluded from the 1952 analysis (table 1). Thus, there was no significant change despite the fact that removal of the cases would have aided materially in the management of the registers.

Although the health department's criteria for removing cases from the visible registers are not mandatory, their use provides a systematic and standardized approach to related clinical and clerical management problems.

The visible case register, or active file, contains the tuberculosis case and contact register cards on all cases classified as active, arrested, and inactive for less than 18 months among residents of an area administered by a full-time local health officer. The clinical status considered here refers to the 1950 classification of pulmonary tuberculosis of the National Tuberculosis Association.

After excluding these 4,807 cases, 18,305 known tuberculosis patients were recorded as requiring active medical and nursing supervision compared with 19,923 patients in 1952. Thus, the rate per 1,000 population of 2.4 in 1955 as compared with the 2.8 in 1952 represents a decrease of only 14 percent. The rate per 1,000 population in 1955 ranged from a low of 0.8 in Allegany County to a high of 6.2 in Franklin County. In 1952 the rate varied from 0.9 for Schuyler County to 9.9 for Franklin.

In contrast, between 1951 and 1954, the years that best compare with the years in which the data on the case registers were collected, the death rate fell 53 percent and the newly reported case rate fell 26 percent. It is thus apparent that, as the emphasis on new cases is

shifted to all known cases requiring active care, the need for medical facilities, care, and supervision still definitely exists.

### Prevalence

The prevalence of known tuberculosis throughout New York State, except New York City, is determined from the visible registers (active files) of the local health offices. Actually, many persons with known disease do not constitute public health hazards and consequently should be withdrawn from the active registers although they may be under the care of a clinic or private physician. Conversely, there are as yet thousands of undetected cases subject to case-finding activities.

Nevertheless, the visible registers in the local health offices provide a count of the tuberculosis cases classified as known cases significant for public health supervision.

No consequential change occurred in the percentage distribution of the various types of tuberculosis in the 3 years that had elapsed since the first analysis (table 2). Each category showed a small decrease in number, the aggregate being 1,618. As previously noted, the known prevalence rate per 1,000 population decreased from 2.8 to 2.4.

There were some minor changes in the percentage distribution by stage of disease of pulmonary cases (table 3).

When the 1952 analysis was presented it was stated, "it is apparent that, with approximately 13,000 known pulmonary cases in the moderately and far advanced stages, tuberculosis in upstate New York requires continued efforts

**Table 2. Number and percent of tuberculosis cases in visible registers by type, 1952 and 1955, New York State exclusive of New York City**

Tuberculosis type	1952		1955	
	Num-ber	Per-cent	Num-ber	Per-cent
All types.....	19, 923	100. 0	18, 305	100. 0
Pulmonary.....	18, 118	90. 9	16, 692	91. 2
Other respiratory.....	938	4. 7	843	4. 6
Other forms.....	867	4. 4	770	4. 2

**Table 3. Comparison of 1952 and 1955 percentage distributions of pulmonary tuberculosis cases, by stage of disease, New York State exclusive of New York City**

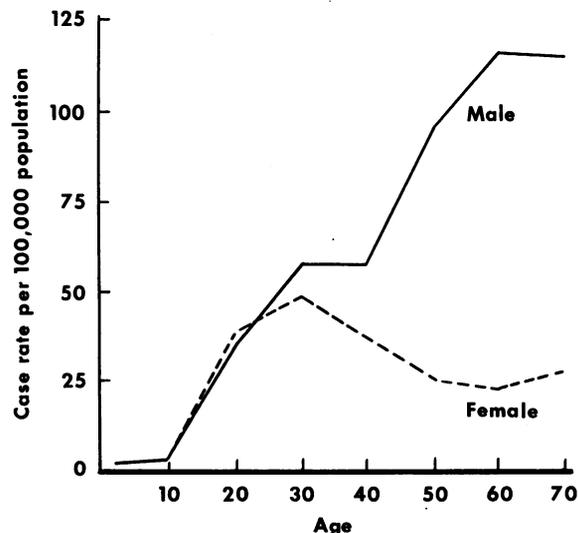
Stage of disease	1952		1955	
	Number	Percent	Number	Percent
All stages-----	18, 118	100. 0	16, 692	100. 0
Minimal-----	4, 715	26. 0	4, 068	24. 4
Moderately advanced-----	7, 623	42. 1	7, 190	43. 1
Far advanced-----	5, 059	27. 9	5, 053	30. 3
Not stated-----	721	4. 0	381	2. 3

by all concerned with public health" (1). The only change needed to make this statement applicable to the 1955 analysis is to note that the number of cases is now only 500 less.

The 1955 analysis reemphasized that the tuberculosis problem is greatest among men, particularly those in the older age group. Males constituted 58 percent of the registered pulmonary cases in 1952 (9) and 62 percent in 1955. The number of males registered as tuberculous remained nearly the same. The rate per 1,000 population was 2.9 for males as compared with 1.8 for females.

The 1955 prevalence rate for women reached a peak at 30 years of age, at which point it was

**Figure 1. Rates for newly reported pulmonary tuberculosis cases, 1954, New York State exclusive of New York City.**



only slightly higher than the rate for men. The male rate rose to a peak at 60 years. These findings are similar to those of 1952 (9). The configuration of the 1955 prevalence rates was also similar to that of the newly reported pulmonary tuberculosis case rates for 1954 (fig. 1). Of 16,692 persons with pulmonary tuberculosis, only 126 were under 15 years of age.

The 1955 review of the registers also showed that far advanced cases accounted for 34 percent of the pulmonary tuberculosis among males as compared with 25 percent for females.

The men with tuberculosis are about 10 years older than the women, and persons with minimal extent are younger than those with advanced disease (table 4).

These findings substantiate data from other sources and point up the need for continued

**Table 4. Median age of pulmonary tuberculosis cases, by sex and stage of disease, 1952 and 1955, New York State exclusive of New York City**

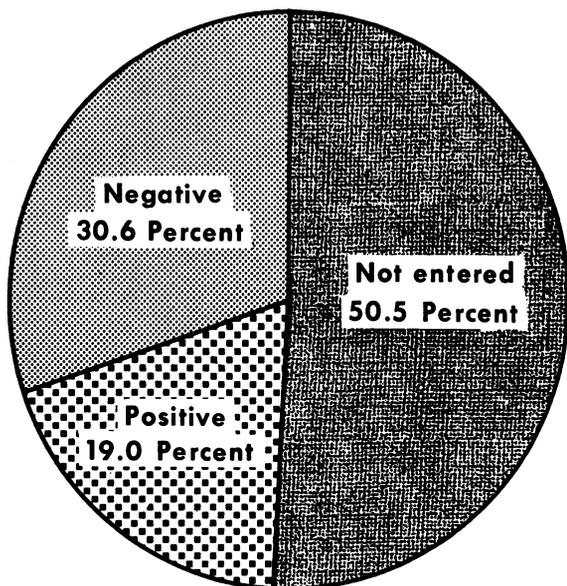
Stage of disease	Median age in years			
	Male		Female	
	1952	1955	1952	1955
All stages-----	48. 4	50. 0	38. 2	39. 0
Minimal-----	45. 8	45. 7	36. 1	35. 6
Moderately advanced-----	49. 0	50. 4	39. 0	40. 1
Far advanced-----	49. 9	51. 4	38. 8	40. 2

and increased case-finding activities among men aged 45 or over.

**Sputum Status**

Of the 16,692 pulmonary cases on the local tuberculosis case registers in 1955, 3,166, or 19 percent, had a positive sputum in the previous 12-month period. During this same period, however, no sputum information was reported for 8,245 cases, or 50 percent (fig. 2). The percentage of cases with no sputum examinations was only slightly less than in 1952. Sputum examinations represent one of the most important items in case and contact supervision. Since facilities are available, greater

**Figure 2. Sputum status of pulmonary tuberculosis cases, 1955, New York State exclusive of New York City.**



effort to obtain sputum examinations and record the results are indicated.

Of 7,173 active or sputum positive pulmonary tuberculosis cases, less than half were hospitalized in 1955 (table 5). This is similar to the situation in 1952. Only slightly more than half of the 3,166 cases with positive sputum in the previous 12 months were hospitalized, practically no change since 1952. Is it not foolhardy to be complacent about tuberculosis while 3,740 patients who are either active or sputum positive, or both, remain unhospitalized where hos-

pital facilities are available? Of the 1,475 nonhospitalized sputum positive cases, 325 have never been hospitalized for tuberculosis. Nearly 300 of those hospitalized were treated for less than 6 months in hospitals.

As was pointed out in the 1952 analysis, "For many reasons, some more valid than others, it is difficult to hospitalize and keep hospitalized every case requiring hospitalization. Nevertheless, these reasons should be known and recorded and the number of cases in this category reduced for the welfare of the individual as well as that of the community" (10). It must be constantly remembered that these patients, even if under supervision, constitute a potential health hazard.

Nearly 1,000 active cases have no known medical supervision (fig. 3). Such cases certainly constitute a challenge in the control of tuberculosis. Systematic conference-type review of these cases by the local health officer, the clinician, and the supervising public health nurse could very well result in a significant reduction in the number of unsupervised cases.

#### Clinical Status

The clinical status, or activity at time of last report, of the 16,692 pulmonary cases in the active files is shown in figure 4. There were changes between 1952 and 1955, namely, a decrease in the percentage of "active" and "activity not stated" categories. Nevertheless, the clinical status of more than 3,000 cases was not stated or was undetermined.

**Table 5. Sputum positive<sup>1</sup> and other active pulmonary cases, by hospitalization status, 1955, New York State exclusive of New York City**

Sputum and clinical status	Number			Percent in hospital
	Total	In hospital <sup>2</sup>	Not in hospital	
All cases	7, 173	3, 433	3, 740	47. 9
Sputum positive in past 12 months	3, 166	1, 691	1, 475	53. 4
Active	2, 413	1, 548	865	64. 2
Arrested	341	24	317	7. 0
Inactive	117	6	111	5. 1
Not stated or undetermined	295	113	182	38. 3
Sputum negative or no expectoration, active status	1, 024	369	655	36. 0
Sputum not examined or no information, active status	2, 983	1, 373	1, 610	46. 0

<sup>1</sup> Cases classified as arrested or inactive may have positive sputum.

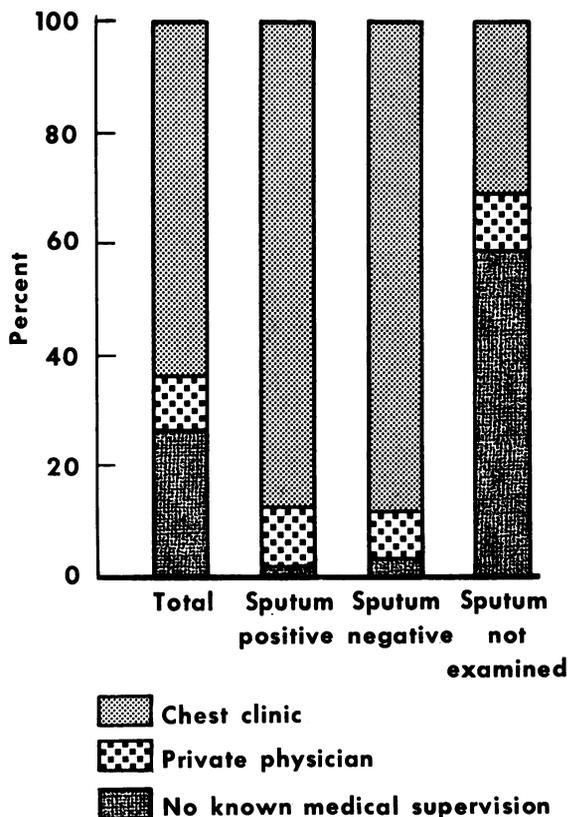
<sup>2</sup> Bacteriological status at time of admission.

Knowledge of the clinical status of cases is not merely of academic interest but has definite administrative value. Clinical status, in addition to the stage of disease, laboratory findings, family conditions, and so forth, determines the amount of supervision the patient and his contacts require. During 1955, 107,406 public health nursing and bedside visits were made to tuberculosis patients and contacts, representing 14.6 percent of the total visits (11). With nursing time at a premium, an up-to-date register will enable the health officer to use nursing service more effectively and economically.

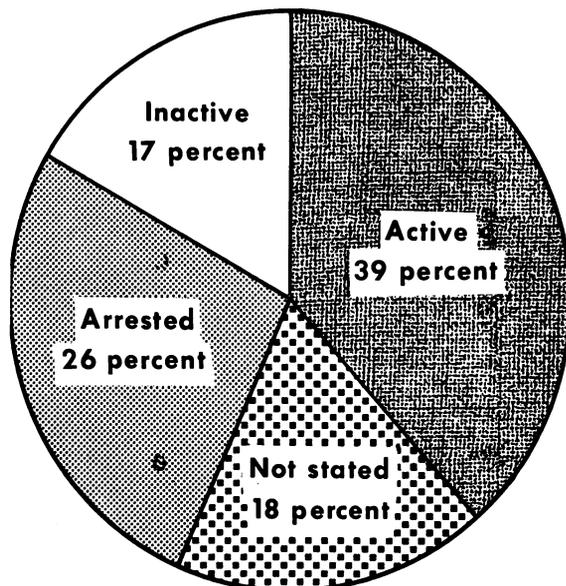
### Hospitalization Status

With regard to the pulmonary cases classified by clinical and hospitalization status, the findings are not too dissimilar to those of 1952 (table 6). About one-quarter were hospitalized; of the active pulmonary cases slightly

**Figure 3. Sputum positive and other active pulmonary tuberculosis cases not in hospital, 1955, New York State exclusive of New York City.**



**Figure 4. Clinical status of pulmonary tuberculosis cases, 1955, New York State exclusive of New York City.**



more than one-half were hospitalized. Of the nonhospitalized cases 25 percent were classified as active, 33 percent as arrested, 22 percent as inactive, and 20 percent not stated. Between 1952 and 1955 there was a decrease in the percentage of "active" and "activity not stated" groups. Nevertheless, the clinical status of nearly 2,500 nonhospitalized pulmonary cases was undetermined or not stated. Of these patients more than half were under chest clinic supervision and another 10 percent under the care of private physicians (fig. 5). It is recognized that there are delays in determining a patient's clinical status, but prolonged delays affect administrative decisions concerning contact examinations and nursing supervision. When such data are available and yet not entered on the visible register, the value of the register is vitiated.

Nearly 3,000 of the 12,585 nonhospitalized pulmonary cases were under no known medical supervision. About one-third of the 3,130 nonhospitalized pulmonary cases with active tuberculosis were under no known medical supervision (fig. 5). Since, by definition, a person on the register is in need of medical supervision, such unsupervised persons jeopardize their cure and rehabilitation and are potential spreaders of the disease.

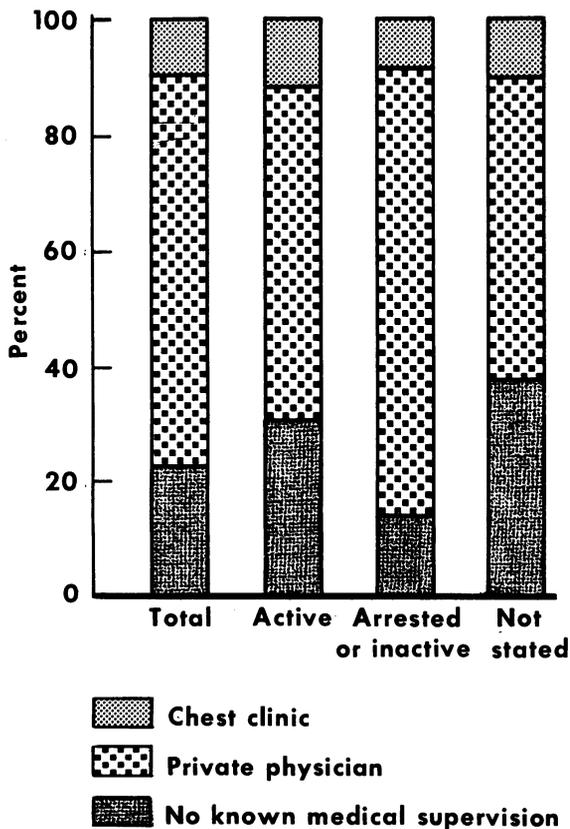
Of 13,911 nonhospitalized cases of tubercu-

**Table 6. Pulmonary cases, by clinical and hospitalization status, 1955, New York State, exclusive of New York City**

Clinical status	Number			Percent by hospital status			Percent by clinical status		
	Total	In hospital	Not in hospital	Total	In hospital	Not in hospital	Total	In hospital	Not in hospital
Total.....	16, 692	4, 107	12, 585	100. 0	24. 6	75. 4	100. 0	100. 0	100. 0
Active.....	6, 420	3, 290	3, 130	100. 0	51. 2	48. 8	38. 4	80. 1	24. 9
Arrested.....	4, 336	132	4, 204	100. 0	3. 0	97. 0	26. 0	3. 2	33. 4
Inactive.....	2, 852	69	2, 783	100. 0	2. 4	97. 6	17. 1	1. 7	22. 1
Not stated or undetermined.....	3, 084	616	2, 468	100. 0	20. 0	80. 0	18. 5	15. 0	19. 6

losis (all forms) 2,451 had not been clinically observed since 1952 (table 7). From such a large number of nonhospitalized cases, many of them active, and the large group of unsupervised cases, there arises the stark realization that much more remains to be done before

**Figure 5. Clinical status and type of supervision of pulmonary tuberculosis cases not in hospital, 1955, New York State exclusive of New York City.**



tuberculosis may be considered as completely controlled, much less eradicated.

Many of the patients not heard from for 12 months or more, and possibly even some with more recent cases, have undoubtedly moved away, died (without mention of tuberculosis on the death certificate), become lost, or have had inactive tuberculosis for the time period specified for transference from the administratively active file to the closed file. Some patients, despite positive sputum, may be considered as having attained maximum hospital benefit. And, of course, hospitalized patients on weekend passes with the extensive liberty to associate with such susceptible groups as young children may truly be more of a hazard than some nonhospitalized patients who are effectively isolated by geographic, economic, and social conditions.

Even so, substantial numbers of the supposedly known cases undoubtedly still have tuberculosis which has not been completely inactivated. In the light of new therapeutic approaches and surgical skills, many of them

**Table 7. Year of last clinical observation of nonhospitalized tuberculosis cases, 1955, New York State exclusive of New York City**

Year	Number	Percent
Total.....	13, 911	100. 0
1954-55.....	9, 982	71. 8
1953.....	1, 478	10. 6
1952.....	788	5. 7
1951.....	501	3. 6
1950.....	338	2. 4
Before 1950.....	824	5. 9

could, it seems, after proper supervision, attain inactive status and erase a community hazard as well as an economic problem.

Tuberculosis is still a costly disease both in lives and money despite the declining mortality and morbidity rates. The number of newly reported cases, as well as the number of significant cases in the registers, indicates that further efforts are vital if effective tuberculosis control is to be accomplished.

Periodic case register analysis contributes to this goal since it helps to sharpen the focus on tuberculosis and pinpoints the problem of the disease as it now exists in each city and county. As each case on the register is reviewed the unsolved problems and vagaries, as they appear to exist for each individual patient, may be further defined. Through such action, specific steps may be taken to provide the necessary social services as well as public health and clinical supervision.

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## Richardson Appointed Assistant Secretary

**Elliot Lee Richardson** was sworn in as Assistant Secretary of Health, Education, and Welfare on January 1, 1957, replacing Roswell B. Perkins, who resigned.

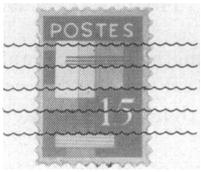
Mr. Richardson's duties involve assistance in the development and coordination of the Department's programs, especially in the field of legislation.

Prior to his appointment, which is subject to United States Senate confirmation, the new Assistant Secretary was associated with a Boston law firm. He was assistant to Senator Saltonstall of Massachusetts in 1953-54, and occasionally during the past 2 years he served

as consultant to Governor Herter and Lieutenant Governor Whittier of Massachusetts.

Following his graduation from Harvard Law School in 1947, Mr. Richardson served as a law clerk to Judge Learned Hand in 1947-48 and during the next 2 years as a law clerk to Justice Felix Frankfurter.

Mr. Richardson is a director of the Executive Committee of the Salzburg Seminar in American Studies, a trustee of Radcliffe College, and secretary of the Massachusetts General Hospital as well as secretary, ex-officio, of its board of trustees.



# INTERNATIONAL MAIL POUCH

*These paragraphs, based on overseas reports from public health personnel with missions and field parties of the International Cooperation Administration, give a glimpse into health work abroad. The original material appears in an administrative publication distributed by the Public Health Division of the ICA.*

## **Border Conference**

Thailand and Burma, at Chieng-mai in August 1956, held the first conference in Southeast Asia on antimalaria activities along a common border. Delegates found that antimalaria activities are quite similar in the two countries. The Thailand program has surveys under way to complete border coverage, but the Burma program, in much earlier stages, has yet to gain the cooperation of tribes in remote areas along the border.

The conference recommended that the two countries coordinate antimalaria activities and that Burma, if unable to reach all malarious areas along the border immediately, give priority to operations at some 10 focal points of cross-border traffic.

—ROBERT L. ZOBEL, M.D., *chief, Health and Sanitation Division, United States Operations Mission, Thailand.*

## **Israel Stresses Prevention**

A rectangular, prefabricated building houses the newly opened Kiryat Shmone Health Center built by the Israeli Government. The center provides family health services, both preventive and curative, to approximately 18,000 people in Kiryat Shmone and in outlying settlements and *kibbutzim*. Mostly new immigrants, the residents of Kiryat Shmone represent some six ethnic groups with different cultural patterns.

Within the center are 18 hospital beds, 6 for obstetrical patients, 6 for pediatric patients, and 3 beds each for adult male and female patients. Four

public health nurses offer consultation and advice and engage in case finding. A pediatrician heads a maternal and child welfare subcenter. An anthropologist, studying differing ethnic patterns, meets regularly with the staff. A health educator is conducting a program of public health education and is planning inservice courses for the professional staff.

—JACOB H. LANDES, M.D., *acting chief, Health and Sanitation Division, United States Operations Mission, Israel.*

## **Elephant Express**

To visit the Mnongs and Jarais of Vietnam, you ride an elephant over unmarked trails, or walk. When rivers must be crossed, the choice is between the river and the elephant. There are no maps.

First, you go to Ban Don, by jeep from Ban Me Thuot, over 50 kilometers of dust, mud, and bumps. At Ban Don, you look for the man who will provide you with seven elephants, each with a driver and a helper. You also take a guide. Ours was Leslie Smith, a professional hunter, who interpreted for us, too, but he did not know the country, as it has little game and he had not entered it before. Fortunately, we also had a local guide.

We were the first non-Asians to enter the area in the past 3 years. In the past it had been visited but rarely by French hunters, scientists, and missionaries. Dr. George J. Stein and I were the first Americans, so far as we could learn, and the first malaria control team of any nationality.

One of our malaria control technicians, Y. Khuinh, fortunately was a member of one of the local mountain tribes, and was able to negotiate for us. He was a good assistant and conversant with our aims. We might have been handicapped by intertribal conflicts if we had had an assistant from the wrong tribe. But Y. Khuinh and Y. Suah, both Rhadia tribesmen in Ban Me Thuot who have been trained in malaria control in Taiwan, can assist

future work in this district. They also know French, but not English.

We slept in bedding rolls in temporary camps in the open jungle where there was a stream, or in the houses offered by the tribes. In a tour of about 150 kilometers, we visited three villages: all we could find by inquiry and travel. These were Bon Drang Phok (pop. 85); Ba Ya Soup I (pop. 180); and Ba Ya Soup II (pop. 120). There are no doctors or first-aid stations. The tribes were always friendly and cooperated freely except when Dr. Stein tried to obtain 20 cc. of blood for a serologic study. He was able to persuade only 6 donors. I obtained 236 blood smears and examined 232 spleens.

The isolation of these tribes offers excellent opportunities for public health research and action. Liberal and regular use of an antimalarial drug for 2 or 3 years might be directed at eradicating the malaria parasite here. For example, here Y. Khuinh and Y. Suah can go into the region by elephant, remain 1 or 2 weeks at a time, and inform the chief of each village who should have prophylactic doses and who should have curative doses. They can bring in a 6-month supply of antimalarial drugs, enough to last until they make a return visit to take blood smears and prescribe further treatment. The villagers have seemed quite cooperative about taking the drugs. An alternative or supplement to the administration of drugs is to carry in dieldrin and DDT by elephant for spraying villages. Three villages can be treated with 14 pounds of 50 percent wettable dieldrin.

—HARRY S. STAGE, *formerly malaria and vector control adviser, United States Operations Mission, Vietnam.*

### **Do It Yourself**

The environmental sanitation project in rural villages in the coastal area of Ecuador is progressively organizing communities, conducting sanitary surveys, and constructing demonstration wells and privies. Approximately 50 percent of the householders are building sanitary privies at their own expense. Many requested to purchase sanitary privy slabs available through the missions.

—JAMES D. CALDWELL, *chief, health, welfare, and housing field party, United States Operations Mission, Ecuador.*

### **The Two R's**

The requests of patients at the National Psychiatric Hospital of Panama for help in learning to read and write led to a forward step in the direction of therapy and rehabilitation. The chief of the occupational therapy department persuaded the Ministry of Education to assign a teacher to hold classes for all interested patients at the hospital. The classes meet under a large shady tree because there are no classroom facilities.

—J. G. TOWNSEND, M.D., *chief, health, welfare, and housing field party, United States Operations Mission, Panama.*

### **Baby Clinics Popular in Surinam**

In Republiek, the center of three Surinam communities, including Vier Kinderen and Bersaba, mothers cleaned and prepared the Train Service Building so that we could establish a consultation bureau for their infants and toddlers. Fifty-six babies were brought by mothers to the first clinic. At the second clinic, 4 weeks later, 162 infants and preschool children were seen.

—W. ALAN LAFLIN, *director, United States Operations Mission, Surinam.*

### **Point Four**

The Director of the Ministry of Health, the Governor of Isfahan, and a few leading physicians of the city visited a class for untrained midwives in one of Iran's village health centers. The visitors were told to ask the midwives any question they pleased. One of the physicians pointed a finger at an elderly midwife and said, "What would you do in a delivery if the baby's feet came first?" The old village midwife looked at him and said, "I would call a doctor."

It was in this same village that the Governor of Isfahan asked the *kathodah* (village mayor), "What advantages have you seen from having the public health people work in your village?" The *kathodah* replied, "Your Excellency, dear Sir, we have had no deaths in our village for over a year."

—HELEN J. BAKHTIAR, R.N., *regional public health nurse, United States Operations Mission, Iran.*